# STIC Search Report
## EIC 2100

USPTO

**STIC Database Tracking Number: 143598**

| TO: | From: |
|---|---|
| **Thu Ha Nguyen**<br>**Location: 4A71**<br>**Art Unit : 2155**<br>**Friday, January 28, 2005**<br><br>**Case Serial Number: 09905080** | **David Holloway**<br>**Location: EIC 2100**<br>**RND 4B19**<br>**Phone: 2-3528**<br><br>**david.holloway@uspto.gov** |

## Search Notes

Dear Examiner Nguyen,

Attached please find your search results for above-referenced case.
Please contact me if you have any questions or would like a re-focused search.

David

Search and Information Resources Administration

```
Set     Items   Description
S1    6396310   BANDWIDTH? OR FLOW? OR RESOURCE? OR LOAD? OR CAPACITY OR D-
            ATA()RATE?
S2     374665   S1(3N)(CONTROL? OR BALANC? OR MANAGE? OR ADMINIST?)
S3    1629690   SWITCH? OR NODE? OR SERVER? OR ROUTER? OR BRIDGE? OR GATEW-
            AY?
S4       8004   (VIRTUAL? OR LOGICAL?)(2N)(LANE? OR CHANNEL? OR ROUTE OR R-
            OUTES OR PATH OR PATHS OR THREAD?)
S5     440245   QUEU? OR CACH? OR BUFFER? OR TEMPORAR?()(STORAGE? OR MEMOR-
            ?)
S6       4663   INFINIBAND? OR HCA
S7        691   S2 AND S3 AND S4
S8        194   S7 AND S5
S9          0   S8 AND S6
S10         1   S7 AND S6
S11        38   S2 AND S6
S12        44   S2(5N)S3 AND S4 AND S5
S13        62   S8 AND (NOTIF? OR PING OR ACK OR ACKNOWLEDG? OR MESSAG?)
S14       125   S11 OR S12 OR S13
S15        84   RD (unique items)
S16        59   S15 NOT PY>2000
S17        33   S16 AND S13
S18        34   S10 OR S17
File   8:Ei Compendex(R) 1970-2005/Jan W3
         (c) 2005 Elsevier Eng.  Info. Inc.
File  35:Dissertation Abs Online 1861-2004/Dec
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2005/Jan W4
         (c) 2005 BLDSC all rts. reserv.
File   2:INSPEC 1969-2005/Jan W3
         (c) 2005 Institution of Electrical Engineers
File  94:JICST-EPlus 1985-2005/Dec W3
         (c)2005 Japan Science and Tech Corp(JST)
File 111:TGG Natl.Newspaper Index(SM) 1979-2005/Jan 25
         (c) 2005 The Gale Group
File   6:NTIS 1964-2005/Jan W3
         (c) 2005 NTIS, Intl Cpyrght All Rights Res
File 144:Pascal 1973-2005/Jan W3
         (c) 2005 INIST/CNRS
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File  34:SciSearch(R) Cited Ref Sci 1990-2005/Jan W4
         (c) 2005 Inst for Sci Info
File  62:SPIN(R) 1975-2005/Nov W1
         (c) 2005 American Institute of Physics
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Nov
         (c) 2004 The HW Wilson Co.
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
```

18/5/4 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)


04643528 E.I. No: EIP97033564128
**Title: Analysis and optimization of pacing window** flow control **with admission delay**
Author: Suk, Jung-Bong; Cassandras, Christos G.
Corporate Source: Yonsei Univ
Source: IEICE Transactions on Information and Systems v E79-D n 12 Dec 1996. p 1663-1675
Publication Year: 1996
CODEN: ITISEF ISSN: 0916-8532
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical)
Journal Announcement: 9704W5
Abstract: This paper provides a **queueing** model analysis of **virtual route** networks for which a pacing window **flow control** mechanism is employed with an input **queue** included. The input **queue** is introduced into the model to describe the waiting system where **messages** prevented from entering the network are stored in first-come first-serve manner. Both cases of finite and infinite capacity are considered. The model leads to a Markovian **queueing** system, which is fully solved through appropriate use of matrix-geometric methods. The empirical rule is that the optimum window size which maximizes the power criterion including the admission delay is nearly twice the number of hops ( **nodes** of the network). Simulations are presented to verify the analytical results. Finally, performance comparisons with the sliding window protocol are made. Our results show that although the average number of **messages** in the network is higher for the pacing window case, when the input **queue** delay is taken into consideration the overall performance of the pacing window protocol is better than that of the sliding window. (Author abstract) 11 Refs.
Descriptors: *Congestion control (communication); Computer networks; Data communication systems; Optimization; Mathematical models; Data storage equipment; Markov processes; Matrix algebra; Computer simulation; Network protocols
Identifiers: Pacing window **flow control** ; Markovian **queueing** model; **Virtual route** networks; Admission delay; Matrix geometric methods
Classification Codes:
716.1 (Information & Communication Theory); 921.5 (Optimization Techniques); 921.6 (Numerical Methods); 722.1 (Data Storage, Equipment & Techniques); 922.1 (Probability Theory); 921.1 (Algebra)
716 (Radar, Radio & TV Electronic Equipment); 921 (Applied Mathematics) ; 722 (Computer Hardware); 922 (Statistical Methods)
71 (ELECTRONICS & COMMUNICATIONS); 92 (ENGINEERING MATHEMATICS); 72 (COMPUTERS & DATA PROCESSING)

18/5/6 (Item 6 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)


04114530 E.I. No: EIP95032625179
**Title: Modeling** virtual channel flow control **in hypercubes**
Author: Boura, Younes M.; Das, Chita R.
Corporate Source: Pennsylvania State Univ, University Park, PA, USA
Conference Title: Proceedings of the 1st IEEE Symposium on High-Performance Computer Architecture
Conference Location: Raleigh, NC, USA Conference Date: 19950122-19950125
Sponsor: IEEE
E.I. Conference No.: 42661
Source: IEEE High-Performance Computer Architecture Symposium Proceedings 1995. IEEE, Los Alamitos, CA, USA,95TH8026. p 166-175
Publication Year: 1995
CODEN: 001971
Language: English
Document Type: CA; (Conference Article) Treatment: G; (General Review); T; (Theoretical)
Journal Announcement: 9505W3
Abstract: An analytical model for **virtual channel flow control** in n-dimensional hypercubes using the e-cube routing algorithm is developed. The model is based on determining the values of the different components that make up the average **message** latency. These components include the **message** transfer time, the blocking delay at each dimension, the multiplexing delay at each dimension, and the waiting delay at the source **node** . The first two components are determined using a probabilistic analysis. The average degree of multiplexing is determined using a Markov model, and the waiting delay at the source **node** is determined using an M/M/m **queueing** system. The model is fairly accurate in predicting the average **message** latency for different **message** sizes and a varying number of **virtual channels** per physical channel. 13 Refs.
Descriptors: *Interconnection networks; Mathematical models; Algorithms; Markov processes; Process control; **Queueing** theory; Probability; **Switching** ; Multiplexing; Data transfer
Identifiers: **Virtual channel flow control** ; Analytical model; E cube routing algorithm; N dimensional hypercubes; **Message** latency; Markov model; Wormhole **switching** ; M m m **queueing** system; Probabilistic analysis; Multiplexing delay
Classification Codes:
721.3 (Computer Circuits); 921.6 (Numerical Methods); 731.3 (Specific Variables Control); 922.1 (Probability Theory); 723.2 (Data Processing); 722.3 (Data Communication, Equipment & Techniques)
721 (Computer Circuits & Logic Elements); 921 (Applied Mathematics); 731 (Automatic Control Principles); 922 (Statistical Methods); 723 (Computer Software); 722 (Computer Hardware)
72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS); 73 (CONTROL ENGINEERING)

01687281 ORDER NO: NOT AVAILABLE FROM UNIVERSITY MICROFILMS INT'L.
RESOURCE MANAGEMENT **FOR CLASSES OF SERVICE IN WORMHOLE NETWORKS (QUALITY OF SERVICE, ROUTING)**

Author: SMAI, ABDEL-HALIM
Degree: TEKN.DR
Year: 1997
Corporate Source/Institution: KUNGLIGA TEKNISKA HOGSKOLAN (SWEDEN) (1022)
Source: VOLUME 60/02-C OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 448. 142 PAGES
Descriptors: COMPUTER SCIENCE ; ENGINEERING, SYSTEM SCIENCE
Descriptor Codes: 0984; 0790
Publisher: ROYAL INSTITUTE OF TECHNOLOGY, S-100 44 STOCKHOLM, SWEDEN

Parallel computers can provide high compute, storage and communication rates for scientific, engineering and multimedia applications. Nevertheless, designing an efficient communication subsystem for a parallel computer continues to be a challenging problem. For instance, existing multicomputer networks are often not adapted to support classes of service. Network **routers** use arbitration schemes such as first-come-first-served and round-robin which are not suitable to deliver such a service diversity.

Due to its simplicity, low cost and high performance, the wormhole routing **switching** technique has become the method of choice in building high-speed networks today. However, the interaction between multiple **messages** competing for shared resources and the blocking property of wormhole routing increase the risk for network congestion and make it difficult to support pood quality of service.

In this thesis we propose and evaluate **resource management** techniques to support special services for particular classes of traffic in wormhole networks. We address issues related to **management** of network **resources** such as point-to-point link bandwidth and **buffer** storage, and the problem of congestion. Evaluation is done by simulation.

First, we propose a low-latency **virtual channel flow control** for prioritized traffic, called Prioritized Demand Multiplexing (PDM). Two schemes are derived, strict and relaxed PDM, which are based both on round-robin and priority scheduling. Relaxed PDM is particularly appropriate to support multiple number of classes of traffic, based on the concept of extra chances. Based on PDM, we propose fast absorb **flow control** and distance-based **flow control** . Tbe distance-based approach relies on a distance-based priority mapping scheme, and the fast absorb **flow control** on priority setting at the destination instead of the source.

We introduce grouping of **virtual channels** to provide support for classes of service. Two approaches are proposed: static and semi-static. In the semi-static approach, **messages** are allowed to borrow **virtual channels** reserved for **messages** with lower priority. Further, we propose dynamic configuration of **virtual channels** .

Finally, a general approach to global reactive congestion control is developed. The approach uses timeout mechanism to detect congestion, and exploits control lines such as those used for handshaking in the flit-level **flow control** of wormhole **routers** to distribute information about congestion. It is also based on a throttling mechanism that limits the demands placed by the network interface and the processing element.

18/5/19 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC


5836360 INSPEC Abstract Number: C9803-5220P-066
**Title: Ghost packets: a deadlock-free solution for k-ary n-cube networks**
Author(s): Carrion, C.; Izu, C.; Gregorio, J.A.; Vallejo, F.; Beivide, R.
Author Affiliation: Dept. de Electron., Cantabria Univ., Santander, Spain
Conference Title: Proceedings of the Sixth Euromicro Workshop on Parallel and Distributed Processing - PDP'98 - (Cat. No.98EX134) p.133-9
Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA
Publication Date: 1998 Country of Publication: USA xiii+520 pp.
ISBN: 0 8186 8332 5 Material Identity Number: XX98-00234
U.S. Copyright Clearance Center Code: 0 8186 8332 5/98/$10.00
Conference Title: Proceedings of the Sixth Euromicro Workshop on Parallel and Distributed Processing - PDP '98 -
Conference Sponsor: Dept. Electron. Univ. York; Univ. Complutense Madrid
Conference Date: 21-23 Jan. 1998 Conference Location: Madrid, Spain
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P)
Abstract: Improving interconnection subsystems is crucial for the overall performance of a multicomputer system. Hence, a theoretical presentation of a new deadlockfree **message** flow model for k-ary n-cube networks is developed in this paper. The key idea of this **flow control** mechanism is to preserve enough free resources for each possible routing dependency cycle, so that packet progress will be guaranteed. Based on this algorithm, we have proposed a simple **router** structure for a 2-ary n-cube topology with dimensional order routing. Edge or shared **buffering** can be used, requiring a minimum capacity of one packet per **channel** . **Virtual channels** are eliminated, reducing **router** complexity and, consequently, decreasing network latency at lour loads. In fact, the performance evaluation for the 2-ary n-cube with different loads shows an improvement in the latency parameter of about 20% with respect to a deterministic routing with two **virtual channels** . (14 Refs)
Subfile: C
Descriptors: computational complexity; concurrency control; multiprocessor interconnection networks; performance evaluation; system recovery
Identifiers: ghost packets; deadlock-free solution; k-ary n-cube networks ; interconnection subsystems; performance; **message** flow model; **virtual channels** ; complexity; deterministic routing
Class Codes: C5220P (Parallel architecture); C5470 (Performance evaluation and testing); C4230M (Multiprocessor interconnection); C4240C ( Computational complexity); C5440 (Multiprocessing systems); C6150G ( Diagnostic, testing, debugging and evaluating systems)

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Set     Items   Description
S1    2742141   BANDWIDTH? OR FLOW? OR RESOURCE? OR LOAD? OR CAPACITY OR D-
            ATA()RATE?
S2     214150   S1(3N)(CONTROL? OR BALANC? OR MANAGE? OR ADMINIST?)
S3    1625485   SWITCH? OR NODE? OR SERVER? OR ROUTER? OR BRIDGE? OR GATEW-
            AY?
S4       4610   (VIRTUAL? OR LOGICAL?)(2N)(LANE? OR CHANNEL? OR ROUTE OR R-
            OUTES OR PATH OR PATHS OR THREAD?)
S5     294581   QUEU? OR CACH? OR BUFFER? OR TEMPORAR?()(STORAGE? OR MEMOR-
            ?)
S6        347   INFINIBAND? OR HCA
S7        140   S2 AND S3 AND S4
S8         32   S7 AND S5
S9          0   S8 AND S6
S10         0   S7 AND S6
S11        13   S2 AND S6
S12        45   S8 OR S11
S13        29   S12 NOT AD>20010718
File 347:JAPIO Nov 1976-2004/Aug(Updated 041203)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200504
         (c) 2005  Thomson Derwent
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13/5/2 **(Item 2 from file: 347)**
DIALOG(R)File 347:JAPIO


06552957 **Image available**
CONTROL PATH BAND WARRANT SYSTEM IN HIGH SPEED **ROUTER**

PUB. NO.: 2000-138686 [JP 2000138686 A]
PUBLISHED: May 16, 2000 (20000516)
INVENTOR(s): OCHIAI TAMIYA
YASUDA HIROKAZU
APPLICANT(s): TOSHIBA CORP
TOSHIBA TELECOMMUNICATION SYSTEM ENGINEERING CORP
APPL. NO.: 10-311319 [JP 98311319]
FILED: October 30, 1998 (19981030)
INTL CLASS: H04L-012/28; H04Q-003/00

## ABSTRACT

PROBLEM TO BE SOLVED: To attain high speed transfer by reserving a path for a **control flow** so as to maintain a cut-through path even in the case of excess traffic.

SOLUTION: An output side of an asynchronous transfer mode ATM **switch** section 20 of a high speed **router** discriminates packets being output objects in the unit of **virtual channel** VC, a control packet is stored in a priority **buffer** 21a so as to give priority to a control path through which the control packet passes according to the discrimination result and outputted with priority thereby reserving a communication band of the control path. Thus, even on the occurrence of excess traffic, lack of communication of the control packet is avoided so as to maintain a cut-through path and to attain high speed transfer.

13/5/5 **(Item 5 from file: 347)**
DIALOG(R)File 347:JAPIO


05646913 **Image available**
**FLOW CONTROL** METHOD AND MOBILE COMMUNICATION NETWORK HAVING **FLOW CONTROL** FUNCTION

PUB. NO.: 09-261713 [JP 9261713 A]
PUBLISHED: October 03, 1997 (19971003)
INVENTOR(s): NISHIO MASAYA
SHINAGAWA NORITERU
WATANABE YONEO
TANAKA MOTOHARU
APPLICANT(s): Y R P IDO TSUSHIN KIBAN GIJUTSU KENKYUSHO KK [000000] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-093018 [JP 9693018]
FILED: March 25, 1996 (19960325)
INTL CLASS: [6] H04Q-007/22; H04L-012/28; H04Q-003/00; H04Q-007/28
JAPIO CLASS: 44.2 (COMMUNICATION -- Transmission Systems); 44.3 (COMMUNICATION -- Telegraphy); 44.4 (COMMUNICATION -- Telephone)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a **flow control** method and **flow controller** between ATM **nodes** for hand-over in an ATM mobile communication network in which a data loss is eliminated with a small memory capacity.

SOLUTION: A mobile station 11 makes hand-over from a radio base station 21 to a radio base station 22 attended with its movement, and the radio base station 21 sends a hand-over start notice cell to an in-zone control station 31. A cell **switch** controller 81 of the in-zone control station 31 selects a corresponding ATM **virtual channel** and 'holds' output port information relating to the channel and a **flow control** module 103 stores a corresponding cell to an output hold **queue** 113. At the end of hand-over, the radio base station 22 sends a hand-over end notice cell, the cell **switch** controller 91 releases holding of the output port information and a cell **switch** 81 outputs a cell from the output hold **queue** .

13/5/6 **(Item 6 from file: 347)**
DIALOG(R)File 347:JAPIO


02425643 **Image available**
PACKET **FLOW** **CONTROLLING** SYSTEM

PUB. NO.: 63-042543 [JP 63042543 A]
PUBLISHED: February 23, 1988 (19880223)
INVENTOR(s): ONISHI KOICHI
NOGUCHI KIYOHIRO
APPLICANT(s): NIPPON TELEGR & TELEPH CORP <NTT> [000422] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 61-186297 [JP 86186297]
FILED: August 08, 1986 (19860808)
INTL CLASS: [4] H04L-011/20
JAPIO CLASS: 44.3 (COMMUNICATION -- Telegraphy)
JOURNAL: Section: E, Section No. 635, Vol. 12, No. 256, Pg. 33, July 19, 1988 (19880719)

ABSTRACT

PURPOSE: To realize the **flow control** which can cope with the overload condition of traffic, by controlling the transmission throughput by a packet terminal so that its own transmission throughput does not exceed a reported maximum throughput and abandoning excess packets or disconnecting a **logical channel** by an exchange if the packet terminal transmits packets with a throughput exceeding the reported value.

CONSTITUTION: The number of packets is counted by a transmission packet (throughput) counter 14 in every throughput decision cycle which is a certain period reported by a throughput cycle **switching** report line 51, and the counted value is defined as the transmission throughput in the current cycle and is arranged with a network at the time of originating a call or the like, and it is checked by a throughput value comparator 16 whether this throughput value exceeds a maximum transmission throughput value stored in a throughput value holding device 15 or not. If it does not exceeds, a transmission permission report line 54 is set to the transmittable state and a packet transmission (throughput) controller 12 transmits packets from a transmission packet **buffer** 13. If it exceeds, the transmission permission report line 54 is set to the untransmittable state and the packet transmission (throughput) controller 12 stops the transmission.

13/5/8 **(Item 2 from file: 350)**
DIALOG(R)File 350:Derwent WPIX


015050340 **Image available**
WPI Acc No: 2003-110856/200310
XRPX Acc No: N03-088171

**Link packet scheduler for use with LAN, WAN, compares accumulated free credits and current buffer receive utilization with programmable credit and utilization threshold respectively.**

Patent Assignee: REOHR R D (REOH-I); SUSNOW D S (SUSN-I)
Inventor: REOHR R D; SUSNOW D S
Number of Countries: 001 Number of Patents: 001
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| US 20020159385 | A1 | 20021031 | US 2001842019 | A | 20010426 | 200310 | B |

Priority Applications (No Type Date): US 2001842019 A 20010426
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| US 20020159385 | A1 | | 21 | H04J-003/14 | |

Abstract (Basic): US 20020159385 A1

NOVELTY - An N-bit counter accumulates free credits relinquished when a data packet is removed or when a link packet is received. The comparators compare the accumulated credits and a current buffer receive utilization with a programmable credit and utilization threshold respectively. A logic device monitors the comparators and schedule link packets accordingly.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) Data network; and

(2) Method of **flow control** of a link packet in a host-fabric adapter.

USE - Link packet scheduler for use with data network (claimed) such as LAN, WAN, CAN, MAN, global area network, wireless personal network, system area network including network using next generation input/output, future input/output, **Infiniband** , server net, etc., input/output hardware adapters and chip sets.

ADVANTAGE - The utilization of credit based **flow control** prevents the transmitter from sending data packets unless the receiver has room for accepting the packets. Thus loss of data packets due to receive buffer overflow is prevented. Programmable credit acquisition threshold enables credits to be returned as they become available not every 65,536 symbol times which results in a significant network performance increase.

DESCRIPTION OF DRAWING(S) - The figure shows the explanatory view of the link packet **flow control** mechanism.

pp; 21 DwgNo 7/9

Title Terms: LINK; PACKET; LAN; WAN; COMPARE; ACCUMULATE; FREE; CREDIT; CURRENT; BUFFER; RECEIVE; UTILISE; PROGRAM; CREDIT; UTILISE; THRESHOLD; RESPECTIVE
Derwent Class: T01; W01
International Patent Class (Main): H04J-003/14
International Patent Class (Additional): H04J-001/16
File Segment: EPI

13/5/10 **(Item 4 from file: 350)**
DIALOG(R)File 350:Derwent WPIX


014834841 **Image available**
WPI Acc No: 2002-655547/200270
XRPX Acc No: N02-518032

**Buffering method of packets transmitted to infiniband port, involves transmitting flow control credits to resource buffer device to stop transmission of packets when memory is filled with specific amount of packets**

Patent Assignee: PEKKALA R (PEKK-I); PETTEY C J (PETT-I); SCHREPPEL C L (SCHR-I)
Inventor: PEKKALA R; PETTEY C J; SCHREPPEL C L

Number of Countries: 001 Number of Patents: 001
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| US 20020085493 | A1 | 20020704 | US 2000740694 | A | 20001219 | 200270 | B |

Priority Applications (No Type Date): US 2000740694 A 20001219
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| US 20020085493 | A1 | | 27 | H04L-001/00 | |


Abstract (Basic): US 20020085493 A1

NOVELTY - A memory with specific size is provided for buffering the packets, and the **flow control** credits for advertising are transmitted to a resource buffer device with size greater than the memory. The transmission of the packets is stopped by transmitting **flow control** credits to the device when it is determined that the memory is filled with specific amount of packets.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) Packet **flow control** method;
(2) Packet buffering system;
(3) **Infiniband** device; and
(4) Buffering system.

USE - For buffering packets transmitted to **infiniband** port by **infiniband** device (claimed), to transfer data between computers and peripheral devices such as storage devices and network interface devices.

ADVANTAGE - Allows **infiniband** port to support more data virtual lanes while maintaining full **infiniband** link bandwidth through over-advertising of buffering resources. Enables supporting multiple **infiniband** ports with lesser memory requirement.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart explaining the operation of buffering system to perform over-advertising of buffering resources.

pp; 27 DwgNo 12/18

Title Terms: BUFFER; METHOD; PACKET; TRANSMIT; PORT; TRANSMIT; FLOW; CONTROL; CREDIT; RESOURCE; BUFFER; DEVICE; STOP; TRANSMISSION; PACKET; MEMORY; FILLED; SPECIFIC; AMOUNT; PACKET
Derwent Class: T01; W01
International Patent Class (Main): H04L-001/00
File Segment: EPI

13/5/13 **(Item 7 from file: 350)**
DIALOG(R)File 350:Derwent WPIX


014374924 **Image available**
WPI Acc No: 2002-195627/200225
XRPX Acc No: N02-148651

**Packet transmission scheduling method in communication network system, involves grouping buffered packets into independent threads, based on destination address, size or function of packets**

Patent Assignee: SUN MICROSYSTEMS INC (SUNM )
Inventor: RYGH H
Number of Countries: 096 Number of Patents: 002
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| WO 200197469 | A2 | 20011220 | WO 2001NO247 | A | 20010612 | 200225 | B |
| AU 200182688 | A | 20011224 | AU 200182688 | A | 20010612 | 200227 | |

Priority Applications (No Type Date): US 2000593450 A 20000614
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| WO 200197469 | A2 | E | 9 | H04L-012/56 | |

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

| | | | | |
|---|---|---|---|---|
| AU 200182688 | A | | H04L-012/56 | Based on patent WO 200197469 |

Abstract (Basic): WO 200197469 A2

NOVELTY - The **buffered** packets for transmission are grouped into independent threads, based on destination address, size or function of the packets. A scheduling algorithm is applied to the grouped packets for selecting the subsequent packet for transmission.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for packet transmission scheduler.

USE - For communication network systems with point-to-point links. Especially for use in network systems with NxN cross bar **switch** and **virtual channel flow control** .

ADVANTAGE - Provides multithreading and non-blocking packet transmission scheduling with fairness and optimal exploitation of connection resources based on the network traffic.

DESCRIPTION OF DRAWING(S) - The figure shows the point-to-point link with transmitter and receiver.

pp; 9 DwgNo 1/1

Title Terms: PACKET; TRANSMISSION; SCHEDULE; METHOD; COMMUNICATE; NETWORK; SYSTEM; GROUP; **BUFFER** ; PACKET; INDEPENDENT; THREAD; BASED; DESTINATION; ADDRESS; SIZE; FUNCTION; PACKET
Derwent Class: W01
International Patent Class (Main): H04L-012/56
File Segment: EPI

13/5/14 **(Item 8 from file: 350)**
DIALOG(R)File 350:Derwent WPIX


012698712 **Image available**
WPI Acc No: 1999-504821/199942
XRPX Acc No: N99-377629
Virtual path **capacitance control procedure for ATM communication - involves changing cell transmitting rate based on transmittable rate of cell**
Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE )
Number of Countries: 001 Number of Patents: 001
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| JP 11220474 | A | 19990810 | JP 9821911 | A | 19980203 | 199942 | B |

Priority Applications (No Type Date): JP 9821911 A 19980203
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| JP 11220474 | A | | 11 | H04L-012/28 | |

Abstract (Basic): JP 11220474 A
NOVELTY - An assignment band to each **virtual path** is calculated, in response to weight (W), which is assigned based on number of arrival call to the waiting **buffer** . A **virtual path switching** system assigns band to **resource management** cell, based on its transmission rate. Then, cell transmitting rate is changed based on transmittance rate of cell.
USE - For ATM communication.
ADVANTAGE - Warranty of minimum through-put of each user is provided.
Dwg.1/10
Title Terms: VIRTUAL; PATH; CAPACITANCE; CONTROL; PROCEDURE; ATM; COMMUNICATE; CHANGE; CELL; TRANSMIT; RATE; BASED; RATE; CELL
Derwent Class: W01
International Patent Class (Main): H04L-012/28
International Patent Class (Additional): H04Q-003/00
File Segment: EPI

13/5/17 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX


012115479 **Image available**
WPI Acc No: 1998-532391/199845
XRPX Acc No: N98-415398

**Determination of maximum allowable cell rate for output link for communications network - calculating maximum allowable flow rate as function of number of active flows through output link, and calculating alpha smoothing parameters for number of** virtual channel

Patent Assignee: CABLETRON SYSTEMS INC (CABL-N); ENTERASYS NETWORKS INC (ENTE-N); CALDETRON SYSTEMS INC (CALD-N)
Inventor: CHARNEY A; CHARNY A
Number of Countries: 081 Number of Patents: 008
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| WO 9843395 | A1 | 19981001 | WO 98US6199 | A | 19980327 | 199845 | B |
| AU 9865910 | A | 19981020 | AU 9865910 | A | 19980327 | 199909 | |
| US 5956322 | A | 19990921 | US 97825201 | A | 19970327 | 199945 | |
| US 5978357 | A | 19991102 | US 97826235 | A | 19970327 | 199953 | |
| EP 972382 | A1 | 20000119 | EP 98912116 | A | 19980327 | 200009 | |
| | | | WO 98US6199 | A | 19980327 | | |
| AU 717162 | B | 20000316 | AU 9865910 | A | 19980327 | 200024 | |
| CA 2285086 | C | 20030812 | CA 2285086 | A | 19980327 | 200360 | |
| | | | WO 98US6199 | A | 19980327 | | |
| EP 1381192 | A1 | 20040114 | EP 98912116 | A | 19980327 | 200410 | |
| | | | EP 200377139 | A | 19980327 | | |

Priority Applications (No Type Date): US 97826235 A 19970327; US 97825201 A 19970327
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| WO 9843395 | A1 | E | 32 | H04L-012/56 | |
| Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW | | | | | |
| Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW | | | | | |
| AU 9865910 | A | | | H04L-012/56 | Based on patent WO 9843395 |
| US 5956322 | A | | | H04L-012/26 | |
| US 5978357 | A | | | G01R-031/08 | |
| EP 972382 | A1 | E | | H04L-012/56 | Based on patent WO 9843395 |
| Designated States (Regional): DE FR GB | | | | | |
| AU 717162 | B | | | H04L-012/56 | Previous Publ. patent AU 9865910<br>Based on patent WO 9843395 |
| CA 2285086 | C | E | | H04L-012/56 | Based on patent WO 9843395 |
| EP 1381192 | A1 | E | | H04L-012/56 | Div ex application EP 98912116<br>Div ex patent EP 972382 |
| Designated States (Regional): DE FR GB | | | | | |

Abstract (Basic): WO 9843395 A

The method of determining a maximum allowed cell rate (MACR) for an output link for an ATM **switch** in a phantom **flow control** method, the output link having a threshold **queue** value and a previous MACR value. The method involves ascertaining a total bandwidth associated with the output link. A portion of the total bandwidth is reserved, and a reserved portion of the total bandwidth is subtracted from the total bandwidth for the output link to produce an adjusted free bandwidth.

An unused link capacity of the adjusted free bandwidth is compared to the previous MACR value. Based on the comparison, the MACR value is calculated. The calculation step involves estimating a number of **virtual channels** flowing into the output link over a selected time interval to produce a channel count, and ascertaining an alpha value based on the channel count.

ADVANTAGE - Improves stability of phantom **flow control** , and enables operation without network **switches** such as shared memory

**switches** . Prevents portion of total bandwidth of output link from being used when maximum allowable cell rate through output link is calculated.

Dwg.3/8

Title Terms: DETERMINE; MAXIMUM; ALLOW; CELL; RATE; OUTPUT; LINK; COMMUNICATE; NETWORK; CALCULATE; MAXIMUM; ALLOW; FLOW; RATE; FUNCTION; NUMBER; ACTIVE; FLOW; THROUGH; OUTPUT; LINK; CALCULATE; ALPHA; SMOOTH; PARAMETER; NUMBER; VIRTUAL; CHANNEL

Derwent Class: W01

International Patent Class (Main): G01R-031/08; H04L-012/26; H04L-012/56

International Patent Class (Additional): G06F-011/00; G08C-015/00; H04Q-011/04

File Segment: EPI

13/5/23 **(Item 17 from file: 350)**
DIALOG(R)File 350:Derwent WPIX


010718390 **Image available**
WPI Acc No: 1996-215345/199622
XRPX Acc No: N96-180770
Virtual path **capacitive management device in communication networks - has control unit which** controls virtual path capacity **so as to enable tracking of judgement result, based on measured number of cells storing bit of information**
Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE )
Number of Countries: 001 Number of Patents: 001
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| JP 8079289 | A | 19960322 | JP 94207668 | A | 19940831 | 199622 | B |

Priority Applications (No Type Date): JP 94207668 A 19940831
Patent Details:

| Patent No | Kind | Lan | Pg | Main IPC | Filing Notes |
|---|---|---|---|---|---|
| JP 8079289 | A | | 7 | H04L-012/42 | |

Abstract (Basic): JP 8079289 A
The device (1) manages the information content communicated through **virtual paths** between multiple **nodes** in communication network (100). Units of information referred as self travel between **nodes** through bus mutually. The communication is performed by multiplex control of information through **virtual paths** in each **node** by adapting media access control protocol.
The DQDB is used, whenever the cell reaches the terminal point of **virtual path** and the number of cells storing bit of information are then measured. Based on the measured result, excess and deficiency of **virtual path capacity** is judged. A **control** unit **controls** the **virtual path capacity** so as to enable tracking of judgement result.
ADVANTAGE - Reduces rate of invalid cell during data transfer. Improves control efficiency. Lowers communication cost.
Dwg.1/6
Title Terms: VIRTUAL; PATH; CAPACITANCE; MANAGEMENT; DEVICE; COMMUNICATE; NETWORK; CONTROL; UNIT; CONTROL; VIRTUAL; PATH; CAPACITY; SO; ENABLE; TRACK; JUDGEMENT; RESULT; BASED; MEASURE; NUMBER; CELL; STORAGE; BIT; INFORMATION
Index Terms/Additional Words: DISTRIBUTED; **QUEUE** ; DUAL; BUS
Derwent Class: W01
International Patent Class (Main): H04L-012/42
International Patent Class (Additional): H04L-012/28; H04L-012/46; H04Q-003/00
File Segment: EPI

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## Web

Definitions of **Infiniband** on the Web:

InfiniBand Architecture is an industry standard, channel-based, switched fabric, interconnect architecture for servers. InfiniBand architecture changes the way servers are built, deployed, and managed.
www.mathstar.com/Technology_Glossary_IJKL.htm

A high speed short-range interconnect designed as a replacement for PCI
www.sagitta-ps.com/support/sagitta_glossary.htm

– Derived from "infinite bandwidth." A switched-fabric I/O technology that ties together servers, storage devices and network devices, easing the bottlenecks created by data-intensive files such as streaming video, voice and audio.
www.iomega.com/europe/support/english/documents/11240e.html

define: infiniband Search

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| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 2 | "20020159385".did. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:11 |
| L2 | 2 | "20020085493".did. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:11 |
| L3 | 56 | (resource or bandwidth or data adj rate) with management same shar$4 same (ressource or bandwidth) same (congest$4 or load$4 adj balanc$4) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:12 |
| L4 | 4 | (control$4 same flow$5) same infiniband with architecture same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:17 |
| L5 | 0 | 709/4$.ccls. and (control$4 same flow$5) same infiniband same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:18 |
| L6 | 12 | (control$4 same flow$5) same infiniband same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:18 |

| | | | | | | |
|---|---|---|---|---|---|---|
| L7 | 106 | (("5898670") or ("6108304") or ("6370475") or ("6405132") or ("4420289") or ("4984264") or ("4914959") or ("5872949") or ("6046979") or ("4251025") or ("4530805") or ("4880041") or ("5520160") or ("5839396") or ("5940372") or ("6112267") or ("6175554") or ("6192406") or ("4258424") or ("4270347") or ("4284942") or ("4313465") or ("4329120") or ("4335696") or ("4360132") or ("4440378") or ("4456223") or ("4539108") or ("4580620") or ("4598541") or ("4769810") or ("4769811") or ("4781536") or ("4809730") or ("4813858") or ("4880376") or ("4889599") or ("4944676") or ("5014265") or ("5024200") or ("5205359") or ("5315586") or ("5363830") or ("5435188") or ("5540205") or ("5544195") or ("5591923") or ("5596603") or ("5675576") or ("5748901")).PN. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2005/01/28 15:29 |
| L8 | 38 | control$4 same flow$4 same (HCA or host adj channel adj adapter) and infiniband and virtual adj lane | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:36 |
| L9 | 12 | infiniband and virtual adj lane same (bandwidth or capacity or data adj rate) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:53 |
| L10 | 91 | control$4 same flow$4 same (HCA or host adj channel adj adapter) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 16:00 |

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 2 | "20020159385".did. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:11 |
| L2 | 2 | "20020085493".did. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:11 |
| L3 | 56 | (resource or bandwidth or data adj rate) with management same shar$4 same (ressource or bandwidth) same (congest$4 or load$4 adj balanc$4) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:12 |
| L4 | 4 | (control$4 same flow$5) same infiniband with architecture same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 16:35 |
| L5 | 0 | 709/4$.ccls. and (control$4 same flow$5) same infiniband same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:18 |
| L6 | 12 | (control$4 same flow$5) same infiniband same (bandwidth or data adj rate or resource) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:18 |

| | | | | | | |
|---|---|---|---|---|---|---|
| L7 | 106 | (("5898670") or ("6108304") or ("6370475") or ("6405132") or ("4420289") or ("4984264") or ("4914959") or ("5872949") or ("6046979") or ("4251025") or ("4530805") or ("4880041") or ("5520160") or ("5839396") or ("5940372") or ("6112267") or ("6175554") or ("6192406") or ("4258424") or ("4270347") or ("4284942") or ("4313465") or ("4329120") or ("4335696") or ("4360132") or ("4440378") or ("4456223") or ("4539108") or ("4580620") or ("4598541") or ("4769810") or ("4769811") or ("4781536") or ("4809730") or ("4813858") or ("4880376") or ("4889599") or ("4944676") or ("5014265") or ("5024200") or ("5205359") or ("5315586") or ("5363830") or ("5435188") or ("5540205") or ("5544195") or ("5591923") or ("5596603") or ("5675576") or ("5748901")).PN. | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2005/01/28 15:29 |
| L8 | 38 | control$4 same flow$4 same (HCA or host adj channel adj adapter) and infiniband and virtual adj lane | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:36 |
| L9 | 12 | infiniband and virtual adj lane same (bandwidth or capacity or data adj rate) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 15:53 |
| L10 | 91 | control$4 same flow$4 same (HCA or host adj channel adj adapter) | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 16:00 |
| L11 | 0 | (control$4 same flow$5) same infiniband with architecture same (bandwidth or data adj rate or resource) and overflow | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 16:37 |
| L12 | 0 | (control$4 same flow$5) same infiniband with architecture same (bandwidth or data adj rate or resource) and over near flow | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 17:06 |

| | | | | | | |
|---|---|---|---|---|---|---|
| L13 | 1 | (control$4 same flow$5) same infiniband same (bandwidth or data adj rate or resource) and over near flow | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2005/01/28 17:07 |